

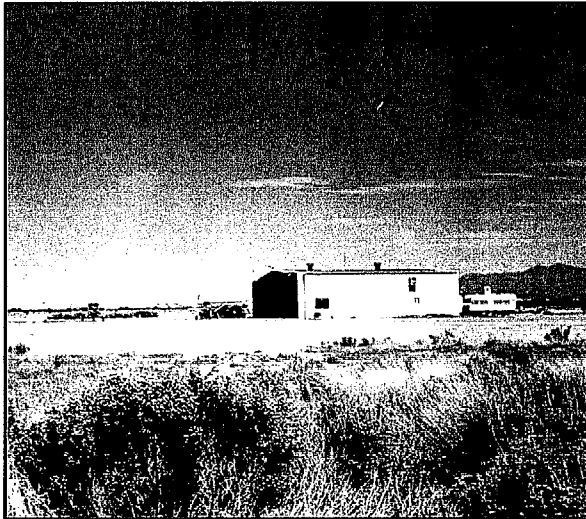


## **Chapter Two**

# **AVIATION DEMAND FORECASTS**

## Chapter Two

# FORECASTS

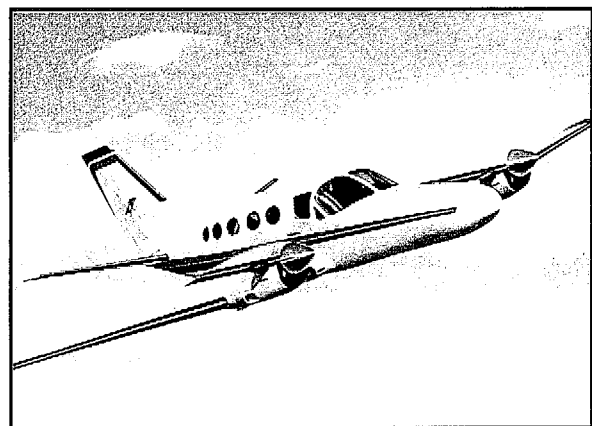


The proper planning of a facility of any type must begin with a definition of the need that it can reasonably expect to serve over the specified planning period. At Buckeye Municipal Airport, this involves the development of a set of forecasts that best define the potential of future aviation demand. Forecasts for the airport can then be used as a basis for determining the types and sizes of aviation facilities required to accommodate the aviation needs of the Buckeye area through the year 2015.

Forecasts are applied to several phases of the master plan study. Initially, they are used to analyze the capacity of the airfield, the terminal areas, and the access system serving the airport. They are also used to evaluate the airport's role in regional, state, and national airport systems and from that, the need

for new or improved navigational systems. They can also be used in the evaluation of the financial feasibility of alternative development actions. In addition, they are used for noise analysis to assist in developing recommendations for compatible land use around the airport.

The primary objective of a forecasting effort is to define the magnitude of change that can be expected over time. Because of the cyclical nature of the economy, it is virtually impossible to predict with certainty year-to-year fluctuations in activity when looking twenty years into the future. However, a trend can be established which delineates long-term growth potential. While a single line is often used to express the anticipated growth, it is important to remember that actual growth may fluctuate above and below this line. The point to remember about



forecasts is that they serve only as guidelines, and planning must remain flexible to respond to unforeseen facility needs. This is because aviation activity is affected by many external influences, as well as by the types of aircraft used and the nature of available facilities.

Recognizing this, it is intended to develop a master plan for Buckeye Municipal Airport that will be demand-based rather than time-based. As a result, the reasonable levels of activity potential that are derived from this forecasting effort will be related to the planning horizon levels rather than dates in time. These planning horizons will be established as levels of activity that will call for consideration of the implementation of the next step in the master plan program.

Aviation activity is affected by many outside influences, as well as by the equipment and facilities available. Major technological breakthroughs, as well as regulatory and economic actions, have resulted in erratic growth patterns and have had significant impacts upon activity at most airports. The following sections attempt to define the historical trends and discuss how other influences may affect future trends in establishing forecasts of aviation activity for Buckeye Municipal Airport.

## **NATIONAL AVIATION TRENDS**

Each year, the Federal Aviation Administration (FAA) publishes its national aviation forecast. Included in this publication are forecasts for air

carriers, air taxi/commuters, general aviation, and military activity. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition is **FAA Aviation Forecasts-Fiscal Years 1996-2007**. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth in the United States. Similar economic analyses are applied to the outlook for aviation growth in international markets.

For the U.S. aviation industry, the outlook for the next twelve years is for moderate to strong economic growth, moderately increasing fuel prices, and moderate inflation. Based on these assumptions, aviation activity by fiscal year 2007 is forecast to increase by 19.5 percent at towered airports and 26.8 percent at air route traffic control centers. The active general aviation fleet is projected to decline for the next few years then begin to rebound for a net increase of 4.9 percent. General aviation hours flown are forecast to increase by 9.9 percent during the same period.

The general aviation industry is an important contributor to the nation's economy. General aviation includes the production and sale of aircraft, avionics and other equipment, along with the provision of support services such as flight schools, fixed base operators, finance and insurance. Historically, the economic cycle of the general aviation

industry closely paralleled that of the national economy. For more than a decade, however, general aviation has been in a state of decline. A number of events have factored into this extended decline in the general aviation industry. These have included the deregulation of the airline industry, increases in airspace restrictions for visual flight rule (VFR) only aircraft, reductions in leisure time, and shifts in personal preferences for goods, services, and leisure time. The overriding factor, however, has been the increased cost in owning and operating a general aviation aircraft.

There are a number of reasons, however, to maintain a favorable outlook of the general aviation industry. One of the primary reasons is the passage of the General Aviation Revitalization Act of 1994. This legislation limits the liability on general aviation aircraft to 18 years from the date of manufacture. This has sparked an interest in aircraft manufacturers to renew the manufacturing of general aviation aircraft due to the reduction in product liability brought about by this legislation. The high cost of product liability insurance was a major factor in the decision to slow (or in some cases) discontinue general aviation aircraft production.

Since the enactment of this legislation in August 1994, Cessna aircraft has committed to resume the production of selected single engine piston aircraft and Piper has announced plans to increase its production level. In addition, the amateur-built aircraft market has shown steady growth over

the past several years. General aviation aircraft shipments were up 12.9 percent in 1995 reversing a six-year decline in aircraft shipments. Most notable about this increase was that it occurred across all aircraft types.

Other reasons for a more favorable long range outlook for general aviation is a growing realization that the industry must "reinvent" itself. As a result, several federal, manufacturer, and industry programs have been initiated. Among these is the FAA's recent streamlining of the small aircraft certification process to include a new entry-level aircraft (Primary Category Rule) that could encourage the production of small, affordable aircraft.

Eleven general aviation organizations have formed a coalition in support of the implementation of the FAA's General Aviation Action Plan. This action plan has goals to seek to provide for regulatory relief and reduced user costs, improved delivery of services through reduced layers of management and more communication, elimination of unneeded programs and processes, and encouragement of product innovation and competitiveness.

Manufacturer and industry programs include the "No Plane No Gain" program promoted jointly by the General Aviation Manufacturers and The National Business Aircraft Association. This program is designed to promote the use of general aviation aircraft as an essential tool of business. Other programs are intended to promote growth in the number of new pilot starts and general flying and

introduce people to general aviation. These include the Aircraft Owners and Pilots Association "Project Pilot"; the National Air Transportation Association's "Learn to Fly" program, and the Experimental Aircraft Association's "Young Eagles" program.

The most notable trend in general aviation is the continued strong use of general aviation aircraft for business and corporate uses. In 1994, the number of hours flown by the combined use categories of business and corporate flying represented 23.3 percent of total general aviation activity. In 1990, the number of hours flown by the combined use categories of business and corporate flying represented 21.8 percent of total general aviation activity.

As a result, of continued strong use of general aviation aircraft for business and corporate uses, the character of the general aviation fleet has continued to change from a fleet consisting mostly of small piston powered aircraft to a fleet made up of more sophisticated turbine powered aircraft. Reflecting the increasing convenience of general aviation flying to business and their push for more sophisticated, turbine powered aircraft, FAA long-term projections show this segment of general aviation growing more rapidly than all others. FAA forecasts project the active turbine-powered fleet growing 1.5 percent annually through the year 2007. This includes the number of turboprop aircraft growing from 4,207 in 1995 to 5,000 in 2007 and the number of turbojet aircraft increasing from 4,073 in 1995 to 4,900 in 2007.

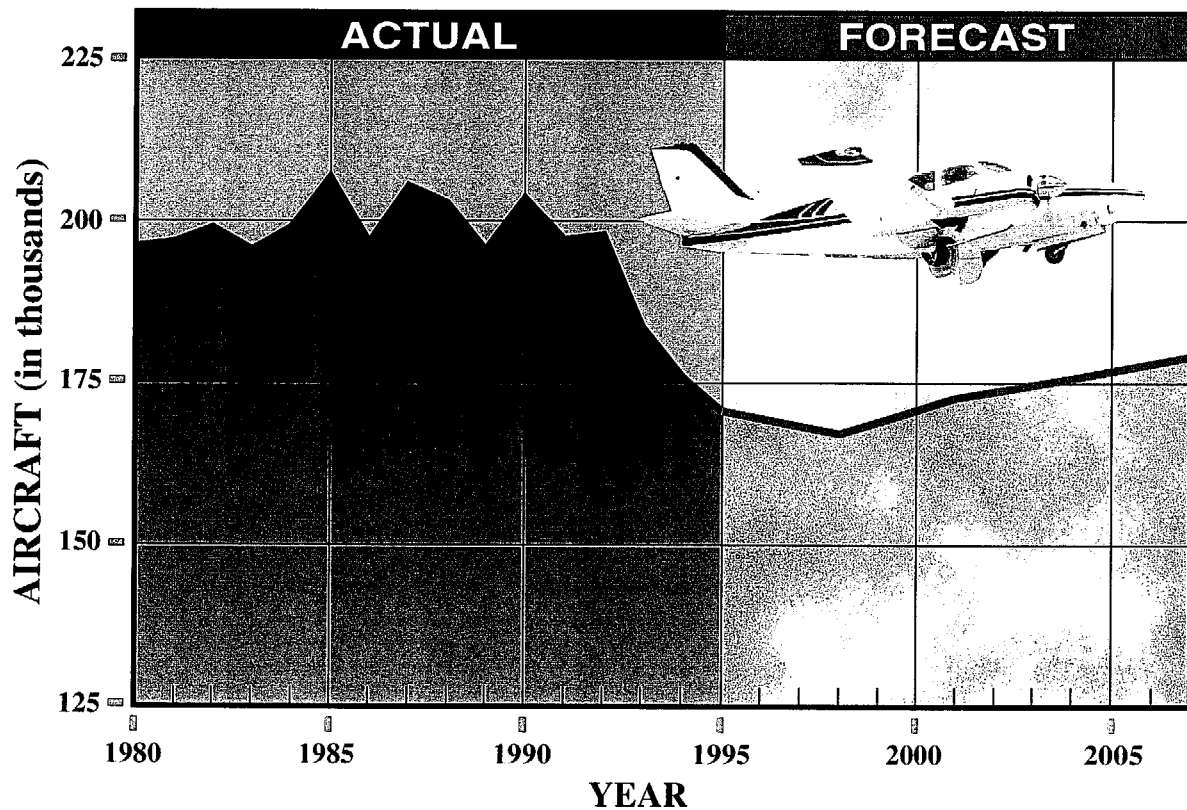
A trend in the type of general aviation operations at FAA towered airports and the number of general aviation aircraft handled at FAA enroute traffic control has also emerged. General aviation operations at both locations have registered increases in the past two years reflecting an increased use of technologically advanced, sophisticated aircraft in adverse weather conditions. General aviation instrument operations at towered airports were up 1.9 percent in 1994 and 0.6 percent in 1995. The number of general aviation aircraft handled at en route centers was up 2.7 percent in 1994 and 3.9 percent in 1995.

Overall, the active general aviation aircraft fleet is expected to continue to decline for the short-term, followed by slow growth. The aging piston-engine portion of the active aircraft fleet is the primary reason for the short term decline in active aircraft. The average age of the active aircraft fleet is 27 years with piston aircraft accounting for most of the aging aircraft. Piston aircraft are anticipated to have a net increase of 3,300 units in the active fleet by 2007. **Exhibit 2A** depicts the FAA forecast for active general aviation aircraft in the United States.

## ***AIRPORT SERVICE AREA***

The initial step in determining aviation demand for an airport is to define its generalized service area for the various segments of aviation the airport can accommodate. The airport service area is determined primarily by evaluating the location of competing airports, their capabilities and services, and their

## ACTIVE GENERAL AVIATION AIRCRAFT



## U.S. ACTIVE GENERAL AVIATION AIRCRAFT (in thousands)

| As of<br>January 1 | FIXED WING       |                  |           |          | ROTORCRAFT |         |              |       |       |
|--------------------|------------------|------------------|-----------|----------|------------|---------|--------------|-------|-------|
|                    | PISTON           |                  | TURBINE   |          | ROTORCRAFT |         | Experimental | Other | Total |
|                    | Single<br>Engine | Multi-<br>Engine | Turboprop | Turbojet | Piston     | Turbine |              |       |       |
| 1995               | 123.3            | 15.6             | 4.2       | 4.1      | 1.4        | 3.0     | 12.9         | 6.2   | 170.6 |
| 1998               | 119.0            | 15.1             | 4.4       | 4.3      | 1.3        | 3.0     | 13.5         | 6.7   | 167.3 |
| 2001               | 122.6            | 15.5             | 4.6       | 4.5      | 1.2        | 3.0     | 14.1         | 7.0   | 172.5 |
| 2004               | 124.5            | 15.6             | 4.8       | 4.7      | 1.1        | 3.0     | 14.6         | 7.4   | 175.7 |
| 2007               | 126.4            | 15.8             | 5.0       | 4.9      | 1.1        | 3.0     | 15.0         | 7.7   | 178.9 |

Source: FAA Aviation Forecasts, Fiscal Years 1996-2007.

Notes: Detail may not add to total because of independent rounding. An active aircraft must have a current registration and it must have been flown at least one hour during the previous calendar year.



relative attraction and convenience. With this information, a determination can be made as to how much aviation demand would likely be accommodated by a specific airport. It should be recognized that aviation demand does not necessarily conform to political or geographical boundaries.

The airport service area is an area where there is a potential market for airport services. Access to general aviation airports, commercial air service, and transportation networks enter into the equation that determines the size of a service area, as well the quality of aviation facilities, distance, and other subjective criteria.

As in any business enterprise, the more attractive the facility is in services and capabilities, the more competitive it will be in the market. As the level of attractiveness expands, so will the service area. If an airport's attractiveness increases in relation to nearby airports, so will the size of the service area. If facilities are adequate and rates and fees are competitive at Buckeye Municipal Airport, some level of general aviation activity might be attracted to the airport from surrounding areas.

In determining the aviation demand for an airport it is necessary to identify the role of that airport. The primary role of the Buckeye Municipal Airport is to serve the needs of general aviation. General aviation is a term used to describe a diverse range of aviation activities which includes all segments of the aviation industry except commercial air carriers and military.

A description of nearby general aviation airports was previously completed in **Chapter One** and included descriptions of other west central Maricopa County public-use airports: Gila Bend Municipal Airport, Glendale Municipal Airport, and Phoenix Goodyear Municipal Airport. The service area for the Buckeye Municipal Airport is limited by the location of these airports and the number of general aviation airports in the Phoenix metropolitan area.

Effectively, the current service area for general aviation services at Buckeye Municipal Airport is limited to the Towns of Buckeye, Wintersburg, Arlington, and Tonopah due to the location of other general aviation airports providing similar general aviation services. Buckeye Municipal Airport's future airport service area, however, could change significantly.

The growth of the Phoenix metropolitan area has been sizable with little indication that it will be slowed in the near future. Urban development outward along I-10 towards the west, specifically toward Buckeye Municipal Airport, is very likely. Thus, analysis of the future airport market area should consider the potential of increased urbanization from Phoenix out toward the Buckeye Municipal Airport. Urban growth towards the airport and away from Phoenix area general aviation airports could tend to increase user demand at Buckeye Municipal Airport because aircraft owners may elect to base their aircraft nearer their residences. Also, increased demand at other area airports may cause aircraft

owners to relocate to Buckeye Municipal Airport in order to avoid heavy traffic and space constraints at those airports.

## POPULATION PROJECTIONS

Local population forecasts provide an indication of the potential for sustaining

growth in aviation activity over the planning period. Historical and forecast population estimates for Buckeye MPA and Maricopa County were obtained from MAG and the Arizona Department of Security and are summarized in Table 2A.

**TABLE 2A**

**Historical and Forecast Population  
Town of Buckeye, Maricopa County**

| Year  | Buckeye MPA <sup>1</sup> | Maricopa County <sup>2</sup> |
|---|--------------------------|------------------------------|
| <i>Historical</i>   |                          |                              |
| 1990  | 9,272                    | 2,122,101                    |
| 1995  | 11,194                   | 2,551,765                    |
| <i>Forecast</i>   |                          |                              |
| 2000  | 18,052                   | 2,954,150                    |
| 2010  | 28,144                   | 3,329,550                    |
| 2015  | 51,414                   | 4,101,775                    |
| Source: <sup>1</sup> Maricopa County Association of Governments<br><sup>2</sup> Arizona Department of Economic Security |                          |                              |

Over the past five years the population in both the Buckeye MPA and Maricopa County have shown a steady year-to-year increase. The population in the Buckeye MPA has increased by 1,922 persons between 1990 and 1995, while the population in Maricopa County has increased by 429,664 persons. These trends are expected to continue. For the Buckeye MPA, the population is projected to grow to 51,414 by the year 2015, an average annual growth rate of 7.9 percent. Between 1990 and 1995, the Buckeye MPA population, however, has increased at an annual rate of 0.38 percent which is well below the forecast

rate. Considering the possibility that urban growth from the Phoenix area outward toward Buckeye could occur, it is likely that annual population growth rates could reach forecast levels. For Maricopa County, the population is projected at 4,101,775 by the year 2015, an average annual growth rate of 2.4 percent.

## GENERAL AVIATION FORECASTS

To determine the types and sizes of facilities that should be planned to

accommodate general aviation activity, certain elements of this activity must be forecast. Indicators of general aviation demand include: based aircraft, the based aircraft fleet mix, general aviation operations, and peak activity. The remainder of this chapter will examine historical trends with regard to these areas of general aviation and project future demand for these segments of general aviation activity at the airport.

## **BASED AIRCRAFT FORECASTS**

The number of based aircraft is the most basic indicator of general aviation demand at an airport. By first developing a forecast of based aircraft, the growth of aviation activities at the airport can be projected. Historical information regarding based aircraft at the airport and Maricopa County registered aircraft was obtained from the **1996 Regional Aviation System Plan (RASP) Implementation Study** prepared for MAG. This study serves as a database for Maricopa County aviation activity including information presented in the **1993 MAG RASP Study**. Additional information was obtained from the **1995 State Aviation Systems Needs Study (SANS)**, and the **1994 Buckeye Municipal Airport Environmental Assessment**.

Reviewing historical information regarding based aircraft revealed that based aircraft has remained relatively constant. As many as 70 aircraft were based at the airport in 1994 when Airline Training Center (ATC) was located at the airport. Based aircraft

subsequently declined after ATC relocated to another airport. Historical based aircraft figures for Buckeye Municipal Airport are presented in **Table 2B**.

While trendline and linear regression analysis methodologies were reviewed for projecting future based aircraft, the fluctuating growth of based aircraft and steady growth of local socioeconomic factors could not be used to develop credible forecasts of based aircraft. Therefore, based aircraft projections were developed by examining market share data and forecasts formulated in other studies.

The market share analysis examines the existing and historical percentage of aircraft based at the Buckeye Municipal Airport to registered aircraft in Maricopa County. Historical registered aircraft figures for Maricopa County presented in the **1996 MAG RASP Implementation Study** were obtained from the Arizona Department of Aviation, Aeronautics Division. Additional registered aircraft information was obtained from the **SANS**. As indicated in **Table 2B**, the number of aircraft registered in Maricopa County between 1985 and 1995 demonstrated a decreasing annual average growth rate of -2.9 percent. Total registered aircraft decreased by 924 aircraft, from 3,586 in 1983 to 2,662 in 1995.

The decreasing trend can be attributed to the method utilized in reporting the data. Aircraft registrations presented in the **SANS** were researched from the **FAA's Census of U.S. Civil Aircraft**.

The census publication lists all aircraft registrations reported within the county. As is often the case, aircraft owners may elect to register their aircraft within a county while not actually basing their aircraft within the county. For this reason, Arizona Department of Transportation (ADOT) decided to count registered aircraft

which are actually based at a county airport. As indicated on **Table 2B**, 1992-1995 registered based aircraft are well below the previous years. The lower numbers reported by ADOT demonstrate that many aircraft owners may be basing their aircraft outside of Maricopa County.

**TABLE 2B**  
**Based Aircraft Forecasts**  
**Buckeye Municipal Airport**

| Year  | Maricopa County<br>Registered Aircraft <sup>1</sup> | Buckeye Municipal<br>Airport Based Aircraft <sup>2</sup> |       | Percent of<br>Maricopa County<br>Registered Aircraft<br>Based at Buckeye |       |
|---|---|--|-------|--|-------|
| <i>Historical</i>   |   |  |       |  |       |
| 1983  | 3,586   | 49   |       | 1.37%  |       |
| 1984  | 3,499   | 45   |       | 1.29%  |       |
| 1985  | 3,508   | 38   |       | 1.08%  |       |
| 1986  | 3,595   | 38   |       | 1.06%  |       |
| 1987  | 3,506   | 38   |       | 1.08%  |       |
| 1988  | 3,366   | 37   |       | 1.10%  |       |
| 1989  | 3,261   | 37   |       | 1.13%  |       |
| 1990  | 3,157   | 37   |       | 1.17%  |       |
| 1991  | 3,407   | 50   |       | 1.47%  |       |
| 1992  | 2,840   | 52   |       | 1.83%  |       |
| 1993  | 2,664   | 40   |       | 1.50%  |       |
| 1994  | n/a   | 70   |       | n/a  |       |
| 1995  | 2,662   | 38   |       | 1.43%  |       |
| <i>Forecast <sup>2</sup></i>  | <i>MAG<br/>RASP</i>                                 | <i>MAG<br/>RASP</i>                                      |       | <i>Environmental<br/>Assessment</i>                                      |       |
| 2000  | 3,228   | 61   | 1.89% | 57   | 1.77% |
| 2005  | 3,404   | 79   | 2.32% | 70   | 2.06% |
| 2015  | 3,832   | 130  | 3.39% | 100  | 2.61% |
| <sup>1</sup> Years 1983-1991 reported in 1995 State Aviation Needs Study; Years 1992-1995 Arizona DOT, Aeronautics Division |   |  |       |  |       |
| <sup>2</sup> Information obtained from the 1996 MAG RASP Implementation Study   |   |  |       |  |       |

**Table 2B** also compares historical based aircraft totals at Buckeye Municipal Airport to historical registered aircraft in Maricopa County

for the period from 1983 to 1995. As a percent of total registered aircraft in Maricopa County, based aircraft at Buckeye Municipal Airport has

remained relatively constant. The largest number of based aircraft at Buckeye Municipal Airport exhibited in 1994 could be contributed to the Airline Training Center (ATC) being based at the airport. At that time ATC based 12 aircraft at the airport.

Although based aircraft totals have subsequently declined after ATC's departure, local economic and population growth as well as the potential for the Airline Training Center (ATC) relocating aircraft at the airport will likely increase the potential for based aircraft growth. Discussions with ATC officials indicate that the operator currently maintains a lease at the airport which includes hangar and office facilities and continues to utilize Buckeye Municipal Airport as a training facility. Moreover, ATC could, at some point in the future, relocate aircraft to Buckeye Municipal Airport. Therefore, it is expected that the airport will attract a slightly larger share of the regional market in the future. This has been reflected in the based aircraft projections for the airport presented in **Table 2B**.

The **1993 MAG RASP Study** projected registered aircraft for Maricopa County to grow by 1,170 aircraft reaching 3,832 aircraft in 2015, equating to a 1.84 annual percentage growth rate. This forecast compares favorably to national forecasts of general aviation aircraft which project a slowing growth rate of the number of general aviation aircraft due to a large number of expected aircraft retirements. The registered aircraft forecasts also compare favorably to forecast population in

Maricopa County which is expected to grow at an average annual rate of 2.07 percent.

Based aircraft projections developed for the **1993 MAG RASP Study** and **1994 Environmental Assessment** for the Buckeye Municipal Airport were also examined. The **MAG RASP** study projects based aircraft at Buckeye Municipal Airport to reach 130 by 2015. This would equate to an annual percentage growth rate of 6.34 percent and would correlate to a 2.61 percentage share of Maricopa County based registered aircraft. If registered based aircraft forecasts for Maricopa County occur as projected and urban growth of the Phoenix MPA moves towards the Buckeye area, a 2.61 percent market share is very likely.

The **1994 Buckeye Municipal Airport Environmental Assessment**, however, indicates that based aircraft will only reach 100 by 2015. This projection appears to be conservative considering the growing local population and potential for ATC relocating aircraft to the airport. This forecast serves as the lower end of the planning envelope of based aircraft. **Exhibit 2B** depicts the **MAG RASP Study** and **1994 Buckeye Municipal Airport Environmental Assessment** based aircraft projections.

The planning envelope developed by the two forecasts could reflect a reasonable forecast for based aircraft at the airport. With this in mind, the time-based projections of anticipated growth should serve only as a guide. At any given time over the next twenty years, the

actual level of based aircraft could fall within the envelope area defined by low range (Environmental Assessment) or the high range (MAG RASP).

In order to develop a master plan that is demand-based rather than time-based, a series of planning horizons have been established that take into consideration the based aircraft forecasts. The planning horizons for based aircraft that will be utilized for the remainder of this master plan are as follows:

- Short Term - 60
- Intermediate Term - 80
- Long Range - 130

#### **BASED AIRCRAFT FLEET MIX**

The based aircraft fleet mix expected to use the airport is projected in order to properly size airport facilities. The

existing mix of based aircraft was determined through on-site investigation and discussion with airport lessees.

Currently, there are 36 single-engine and two multi-engine aircraft based at Buckeye Municipal Airport. It is expected that single-engine piston aircraft will comprise the bulk of based aircraft at the airport in the future, however, the airport has the ability to accommodate turbine powered aircraft as well. The planned industrial park and urban growth of the Phoenix MPA could attract turbine aircraft to the airport. Aircraft that could base at the airport in support of business will tend to be large multi-engine piston, turboprop, or turbojet aircraft. **Table 2C** summarizes the based aircraft fleet mix projection for the airport over the planning period.

| <b>TABLE 2C</b><br><b>Based Aircraft Fleet Mix</b><br><b>Buckeye Municipal Airport</b> |              |                      |                     |                  |            |              |
|--|--------------|----------------------|---------------------|------------------|------------|--------------|
| <b>Year</b>  | <b>Total</b> | <b>Single-Engine</b> | <b>Multi-Engine</b> | <b>Turboprop</b> | <b>Jet</b> | <b>Rotor</b> |
| 1990   | 37           | 35                   | 1                   | 0                | 0          | 1            |
| 1991   | 50           | 46                   | 4                   | 0                | 0          | 0            |
| 1992   | 52           | 48                   | 4                   | 0                | 0          | 0            |
| 1993   | 40           | 36                   | 4                   | 0                | 0          | 0            |
| 1994   | 70           | 70                   | 0                   | 0                | 0          | 0            |
| 1995   | 38           | 36                   | 2                   | 0                | 0          | 0            |
| <b>Forecast</b>  |              |                      |                     |                  |            |              |
| Short Term   | 60           | 54                   | 4                   | 1                | 0          | 1            |
| Intermediate   | 80           | 69                   | 6                   | 2                | 1          | 2            |
| Long Range   | 130          | 109                  | 12                  | 4                | 2          | 3            |

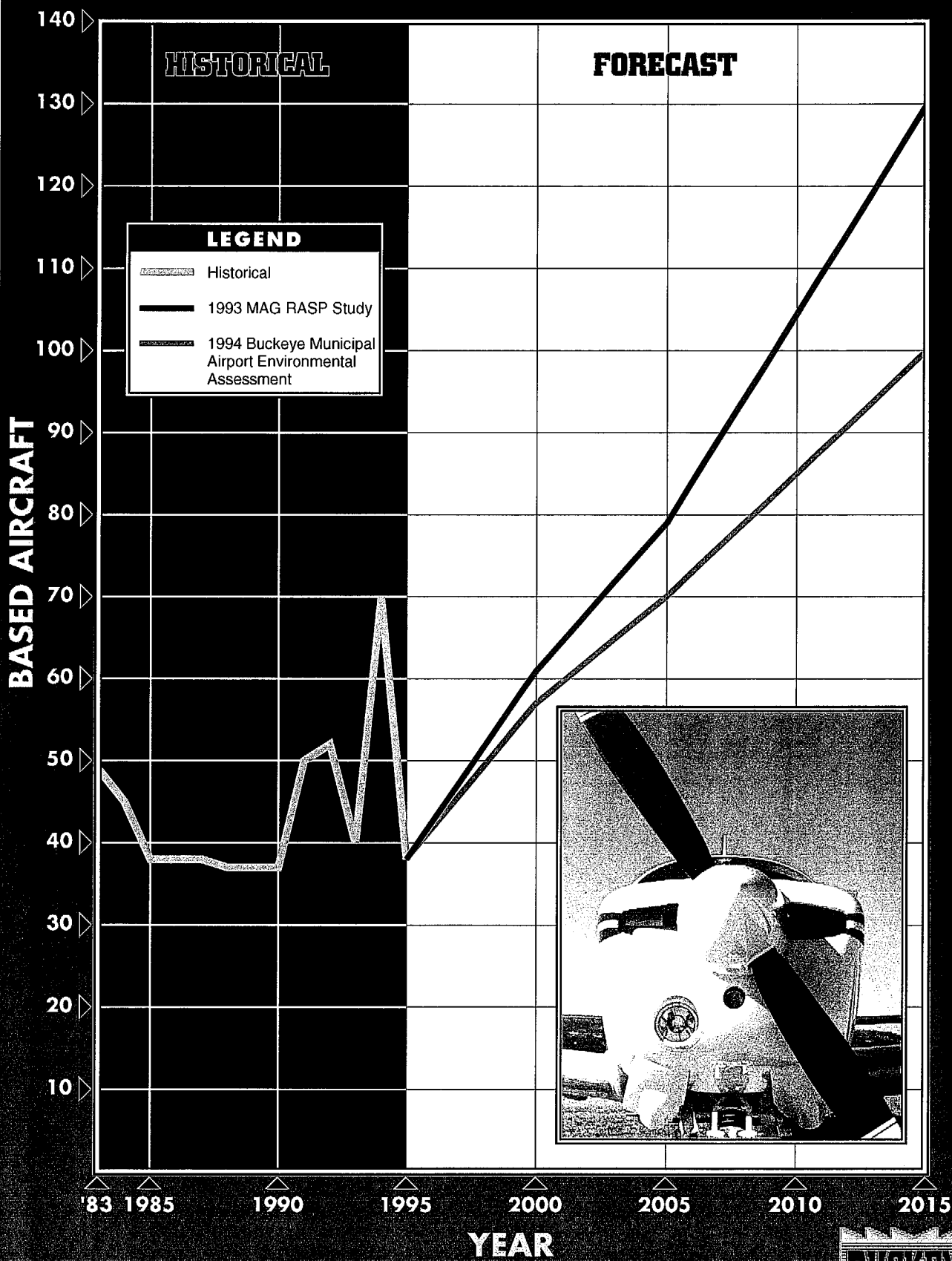


Exhibit 2B  
BASED AIRCRAFT FORECASTS

## ANNUAL GENERAL AVIATION OPERATIONS

There are two types of general aviation operations at an airport: local and itinerant. A local operation is a take-off or landing performed by an aircraft that operates in the traffic pattern or executes simulated approaches or touch-and-go operations. More simply stated, they are generally training operations. Itinerant operations are defined as originating or departing aircraft which are not included under the training category. Typically, itinerant operations increase with business and industry use since business aircraft are used primarily to carry people from one location to another.

Due to the absence of an air traffic control tower at the airport, aircraft operations have not been regularly

counted. Instead, only general estimates of activity based on traffic observations are available. As indicated on **Table 2D**, the reported total operations figure increased sharply between 1990 and 1991. In 1990, itinerant operations were predominant, while in 1992 local operations constituted the majority of total airport operations. This can be contributed to ATC utilizing the airport for training purposes. Because operation levels are only estimates and have fluctuated greatly over the five year period, statistical regression tests provided no reasonable correlations. Aircraft operations as a ratio of based aircraft were examined. As indicated on **Table 2D**, however, this method provides little correlation as operations per based aircraft have ranged between 924 and 4,650.

**TABLE 2D**  
**General Aviation Operations Forecast**  
**Buckeye Municipal Airport**

| Year             | Itinerant Operations | Local Operations | Total Operations | Based Aircraft | Operations per Based Aircraft |
|------------------|----------------------|------------------|------------------|----------------|-------------------------------|
| 1990             | 21,840               | 14,560           | 36,400           | 37             | 984                           |
| 1991             | 15,000               | 160,000          | 175,000          | 50             | 3,500                         |
| 1992             | 15,000               | 160,000          | 175,000          | 52             | 3,365                         |
| 1993             | 55,800               | 130,200          | 186,000          | 40             | 4,650                         |
| 1994             | 40,500               | 94,500           | 135,000          | 70             | 1,929                         |
| 1995             | 25,400               | 59,200           | 84,600           | 38             | 2,226                         |
| <b>FORECAST*</b> |                      |                  |                  |                |                               |
| 2000             | N/A                  | N/A              | 62,500           | 61             | 1,025                         |
| 2005             | N/A                  | N/A              | 81,800           | 79             | 1,035                         |
| 2015             | N/A                  | N/A              | 140,600          | 130            | 1,082                         |

Historical information obtained from the 1996 MAG RASP Implementation Study

\* Forecast obtained from 1993 MAG RASP Study

Previous forecasts were then examined. The **1993 MAG RASP Study** projected general aviation operations for the airport to be 62,500 by the year 2000, 81,800 by 2005, and 140,600 by 2015. Operations per based aircraft would equal 1,025, 1035, and 1,082 respectively. Total operations for 1995 presented in the MAG study, however, fell well below the actual 1995 reported level. The **MAG RASP Study** projected aircraft operations for the airport to be 47,700 in 1995, whereas reported levels reached 84,600.

Utilizing the MAG 1995 forecast figure would yield an average annual growth rate over the twenty year period of 5.6 percent, which is much higher than national FAA projections for aircraft utilization of 0.8 percent annually. Combining actual 1995 reported operational levels with MAG forecasts produces an average annual growth rate of 2.6 percent.

Projecting annual operations at the airport using the FAA projection of a 0.8 percent annual growth rate yields 88,050 operations in the year 2000, 91,620 in 2005, and 99,220 in 2015. It would be reasonable to assume that operations at the airport will grow at a rate higher than the national average as based aircraft numbers are projected to increase and it is expected that ATC may relocate aircraft to the airport and the industrial park may attract additional aircraft. Also, as Phoenix area airports continue to grow and become increasingly congested, more pilots may elect to utilize Buckeye Municipal Airport for training purposes. Therefore, the **1993 MAG RASP Study**

forecasts are more representative of the expected growth at the airport.

**Exhibit 2C** presents the historical and annual operations forecasts for the airport based upon increasing utilization of aircraft and an increase in the number of based aircraft at the airport as presented in the **MAG RASP Study**. Over the planning period it is expected that the number of local operations will decrease as a percentage of total operations as a result of the expected increased utilization of business and corporate aircraft (which are typically itinerant operations). It is expected, however, that local operations will constitute the largest share of total operations due to the training nature of the airport. As previously mentioned, future congestion of Phoenix area airports could increase utilization of Buckeye Municipal Airport for training purposes.

As indicated previously, the time-based projections of anticipated growth should serve only as a guide. Actual activity may fluctuate above or below the line graphically depicted on **Exhibit 2C**. In order to develop a master plan that is demand-based --rather than time-based, the forecasts will be related to planning horizon milestones as follows:

- Short Term
  - 96,000 Total
  - 76,000 Local
  - 20,000 Itinerant
- Intermediate Term
  - 110,000 Total
  - 77,000 Local
  - 33,000 Itinerant

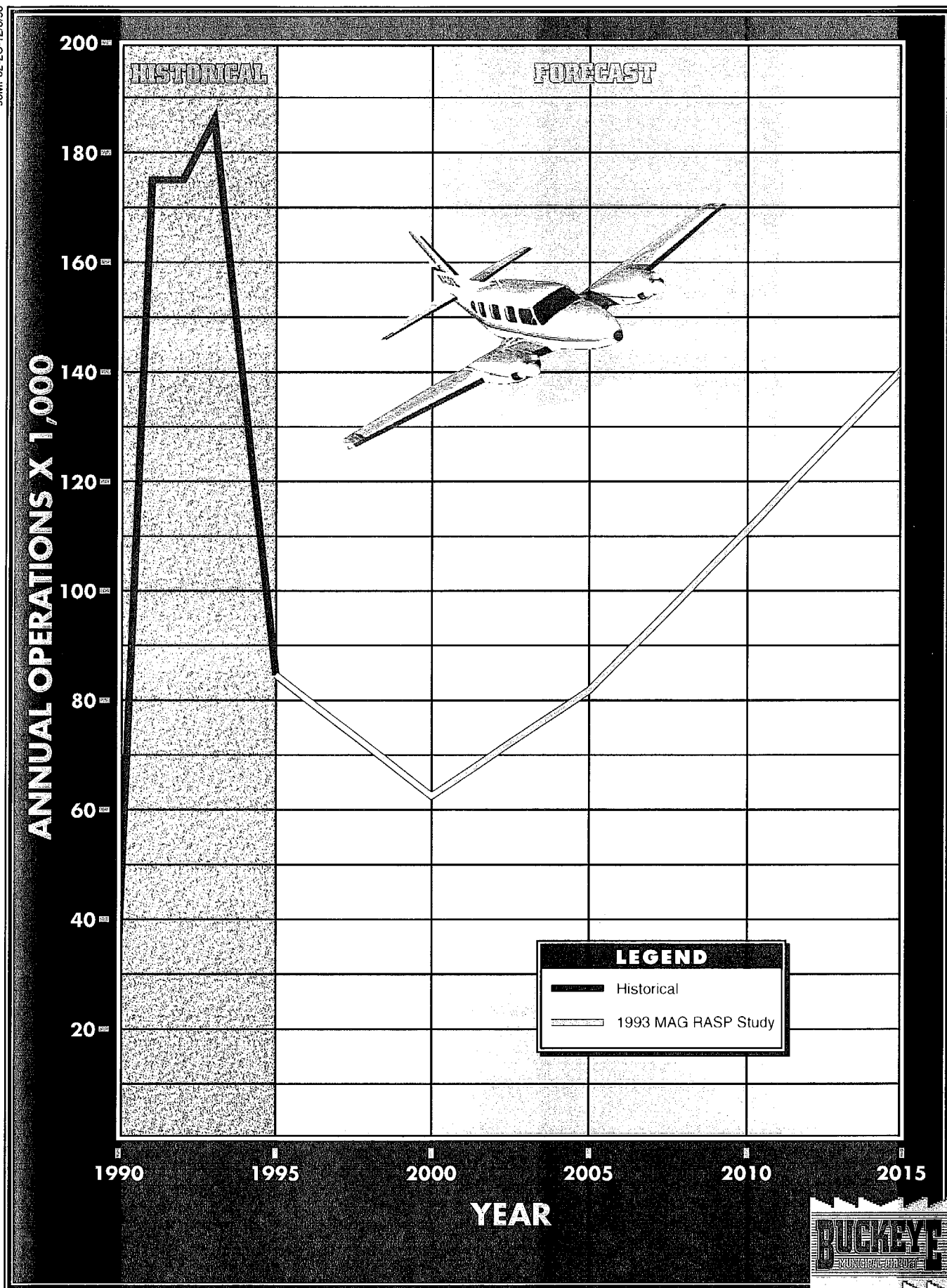


Exhibit 2C  
HISTORICAL AND FORECAST  
ANNUAL OPERATIONS

- Long Range  
140,000 Total  
84,000 Local  
56,000 Itinerant

## ***MILITARY ACTIVITY***

Military operations comprise a small portion of the operations at Buckeye Municipal Airport. FAA Form 5010 has estimated that military operations comprise less than 100 annually. While activity is dependent upon future requirements of the Department of Defense, there is no indication that military operations at the airport will change dramatically in the future. Therefore, future military activity at the airport is expected to be sporadic and comprise less than 100 annual operations.

## ***PEAKING CHARACTERISTICS***

Many airport facility needs are related to the levels of activity during peak periods. The periods used in developing facility requirements for this study are as follows:

- *Peak Month* - The calendar month when peak aircraft operations occur.
- *Design Day* - The average day in the peak month. Normally this indicator is easily derived by dividing the peak month operations by the number of days in a month.
- *Busy Day* - The busy day of a typical week in the peak month. This descriptor is used primarily to determine apron space requirements.
- *Design Hour* - The peak hour within the design day. This descriptor is used primarily in airfield demand/capacity analyses, and in determining terminal building and access road requirements.

It is important to note that only the peak month is an absolute peak within a given year. All the others will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

Adequate monthly information is not available to directly determine peak month general aviation activity at the airport. Therefore, peak period forecasts were determined according to trends experienced at similar airports in Maricopa County. Typically, the peak month for activity at general aviation airports approximates 10 to 12 percent of the airport's annual operations.

Based on the fact that there is no special consideration which would increase any one month's current operational levels, peak month operations were estimated at 10 percent of annual operations. The peak month percentage is expected to increase slightly over the planning period as based aircraft and activity increases at the airport. Design day operations were

calculated by dividing the peak month by 30.

Based on peaking characteristics from similar airports, the typical busy day was determined by multiplying the design day by twenty percent of weekly

operations during the peak month, or 1.4. Design hour operations were determined using 20 percent of the design day operations. **Table 2E** summarizes the peak activity forecasts for the airport.

**TABLE 2E**  
**Forecast of Peak Activity**  
**Buckeye Municipal Airport**

|                   | 1995   | Short<br>Term | Intermediate<br>Term | Long<br>Range |
|-------------------|--------|---------------|----------------------|---------------|
| Annual Operations | 84,600 | 96,000        | 110,000              | 140,000       |
| Peak Month        | 8,460  | 9,600         | 11,000               | 14,000        |
| Design Day        | 282    | 320           | 367                  | 467           |
| Busy Day          | 395    | 448           | 514                  | 654           |
| Design Hour       | 56     | 64            | 73                   | 93            |

## **FORECAST SUMMARY**

This chapter has outlined the various aviation demand levels anticipated over the planning period. In summary, general aviation activity at Buckeye Municipal Airport has not followed the national trends. The airport has growth potential primarily due to a growing local economy and population. In addition, local commercial and industrial growth will influence future activity and based aircraft levels.

The next step in the master plan is to assess the capacity of existing facilities to accommodate forecast demand and determine which facilities will need to be improved to meet these demands. This will be examined in the next chapter -- **Chapter 3, Facility Requirements**. **Table 2F** summarizes the forecasts which have been prepared for the Buckeye Municipal Airport.

**TABLE 2F**  
**Aviation Activity Planning Horizons**  
**Buckeye Municipal Airport**

|                   | 1995          | Short<br>Term | Intermediate<br>Term | Long<br>Range |
|-------------------|---------------|---------------|----------------------|---------------|
| Annual Operations |               |               |                      |               |
| Itinerant         | 25,400        | 20,000        | 30,000               | 56,000        |
| Local             | <u>59,200</u> | <u>76,000</u> | <u>80,000</u>        | <u>84,000</u> |
| Total Operations  | 84,600        | 96,000        | 110,000              | 140,000       |
| Based Aircraft    | 38            | 60            | 80                   | 130           |